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FACTORS AFFECTING WILLINGNESS TO REPORT PATIENT SAFETY INCIDENTS IN HOSPITALS

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Introduction[1]

There is an increased interest in incident reporting as a method for ensuring patient safety (Barach and Small 2000; WHO 2004, Pittet and Donaldson 2006; IOM 2000), in particular as a result of findings investigating error rates which showed that accidental patient harm is associated with around 3-17 per cent of hospital admissions (Brennan et al. 1991; Wilson et al. 1995; Gawande et al. 1999; Vincent et al 1999). In addition to the harm caused to patients, the guilt and shame experienced by health professionals having caused, or been involved in, an adverse incident has been linked with high rates of depression and burnout, particularly amongst junior staff (West et al., 2006, p.1074). Such personal distress has, in turn, been linked with lower quality of patient care, and ultimately, the committing of further medical errors (ibid., p.1075).

The potential human and financial cost of medical error as well as the media coverage surrounding some incidents has led to a far higher salience of patient safety at a policy level[2]. Some have maintained that this has translated into safer practice on the ground. Hence, Sir Liam Donaldson has maintained that "[t]here is much greater awareness among clinicians, managers and policymakers that patients are not as safe as they should be", although admittedly "the pace of change [in installing a "safety first" approach] has been too slow" (Donaldson, 2006, p.4).

In the UK, the costs of Patient Safety Incidents (PSIs)[3] are estimated to be approximately £2 billion a year in additional hospital stays alone (Department of Health 2000). Concerns concerning PSIs in the media have served as a

[1] We are grateful to the members of the PSSQ Centre and to Brian Salter and Sharon Gilad for a number of very helpful comments and suggestions. Any errors or omissions however remain entirely the authors' own responsibility.
[2] For example, the Prime Minister, Gordon Brown, recently gave a speech at the 'Patient Safety Congress' in London (May 2008).
[3] Patient Safety Incidents (PSIs) are defined as 'any unintended or unexpected incident which could have or did lead to harm for one or more patients receiving NHS-funded health care'. This is also referred to as an adverse event/incident or clinical error, and includes near misses (Department of Health 2001).

catalyst for change in promoting patient safety in order to rebuild damaged confidence in the health services overall, and the medical profession in particular. Such incidents include those occurring at the Royal Liverpool Children's Hospital Trust (Alder Hey (Redfern, 2001)) and the events leading up to the Bristol Royal Infirmary Inquiry (Kewell, 2006 and Kennedy, 2001), the Shipman Inquiry (Smith, 2004), and the Kerr/Haslam Enquiry (Department of Health, 2005).

The reporting of incidents and near misses has been seen as a crucial means of improving patient safety (Department of Health, 2000). It has been suggested that high levels of reporting will facilitate lesson-drawing, with information from the reports being disseminated both within and across Trusts (by the National Reporting and Learning System). Health care practitioners will, it is suggested, 'learn' from such information and help make the NHS an 'organization with a memory' –one which is alert to potential threats to patient safety (Department of Health, 2000). The analysis of previous incidents and near-misses provides “free lessons”, which can “work like ‘vaccines’ to mobilize the system’s defences against some more serious occurrence in the future” (Reason, 1997, p.119).

Although other means have been devised of reducing the potential for error, often relying on the manipulation of information sources such as patient and pharmacy records (Evans et al., 1992), "critical incident reporting" has been described as "mak[ing] sense in the absence of clear alternative and cost effective systems for identifying adverse events. Or at least until there are comprehensive means of electronic surveillance based on electronic patient records available in all trusts" (Cook, 2000, p.242). As of 2000, it was reported that 96% of UK NHS Trusts possessed reporting systems, albeit of varying quality and scope (Walshe et al. quoted in Cook, 2000, p.242)[4]. It has been suggested that such systems can enable the NHS to benefit from work within other industries which has promoted learning from accidents and near-misses (Johnson, 2003; Hopkins, 2001).

[4] We are hoping to locate more up-to-date information concerning the coverage of incident reporting systems.

Despite this change in patient safety policy, the most effective incident reporting system in health care has not been found or installed. Incident reporting systems have been subject to constant scrutiny and change (Braithwaite et al. 2008; Coldiron et al. 2005, 2008; Kaldjian 2008; Kleinpell et al. 2006; Provonost 2006; Ricci et al. 2004; Shaw et al. 2005; Thompson et al. 2005; Waring 2004; Wu et al. 2008). Among other things, the underreporting of incidents is considered to be a significant problem for reporting systems (Cullen et al., 1995; Edmondson 2004a, b; Fischer et al., 1997; Hart et al., 1994; Jayasuriya and Anandaciva, 1995; Lawton and Parker 2002; Leape 2002; O'Neil et al., 1993; Schectman and Plews-Ogan 2006; Stanhope et al. 1999).

Comparison of the apparent incidence of patient safety incidents according to reporting systems as compared with case notes and other patient records have suggested that many episodes judged as constituting incidents by trained observers are going unreported (O'Neil et al., 1993; Cullen et al., 1995; Donchin et al., 1995; Stanhope et al., 1999). The disparity has been described as particularly significant in relation to moderately serious or minor incidents (as opposed to incidents which caused major harm) (Stanhope et al., 1999, p.9). As a result, Kaplan et al have described incident reporting as 'not science, but proto-science', given the lack of existing research on the behavioural aspects of incident reporting (Kaplan and Barach, 2002, p.144).

Nonetheless, a number of analyses have detailed the substantial barriers impeding the reporting of incidents and near-misses to hospital- or sub-hospital based reporting systems (Barach and Small, 2000a; Lawton and Parker, 2002; Vincent et al., 1999)[5].

This paper examines in depth why health care professionals may fail to report patient safety incidents to Trust- or sub-Trust reporting systems. Clearly this

[5] Others have examined the extent to which incidents and near-misses are reported to patients (Gallagher et al., 2007; Liebman and Hyman, 2004, p.24). This aspect of reporting is not examined here, although it should be noted that in some contexts, improving reporting to patients has paralleled attempts to increase reporting to other sources (ibid.).

question is related closely to the matter of what is done with incident reporting data. The degree to which relevant and speedy feedback is provided to reporters has been seen as crucial in relation to reporting rates, and this element is discussed below. These two matters are locked into a vicious cycle, as meaningful, contextualized feedback can only be provided if reporting rates are high, yet high reporting rates can perhaps only be achieved if reporters know they will receive meaningful, contextualized feedback. We have taken the decision to analyze the cycle from the perspective of increasing reporting rates rather than feedback, although throughout the paper we remain aware of the symbiotic nature of the relationship between these two factors (see fig.1).

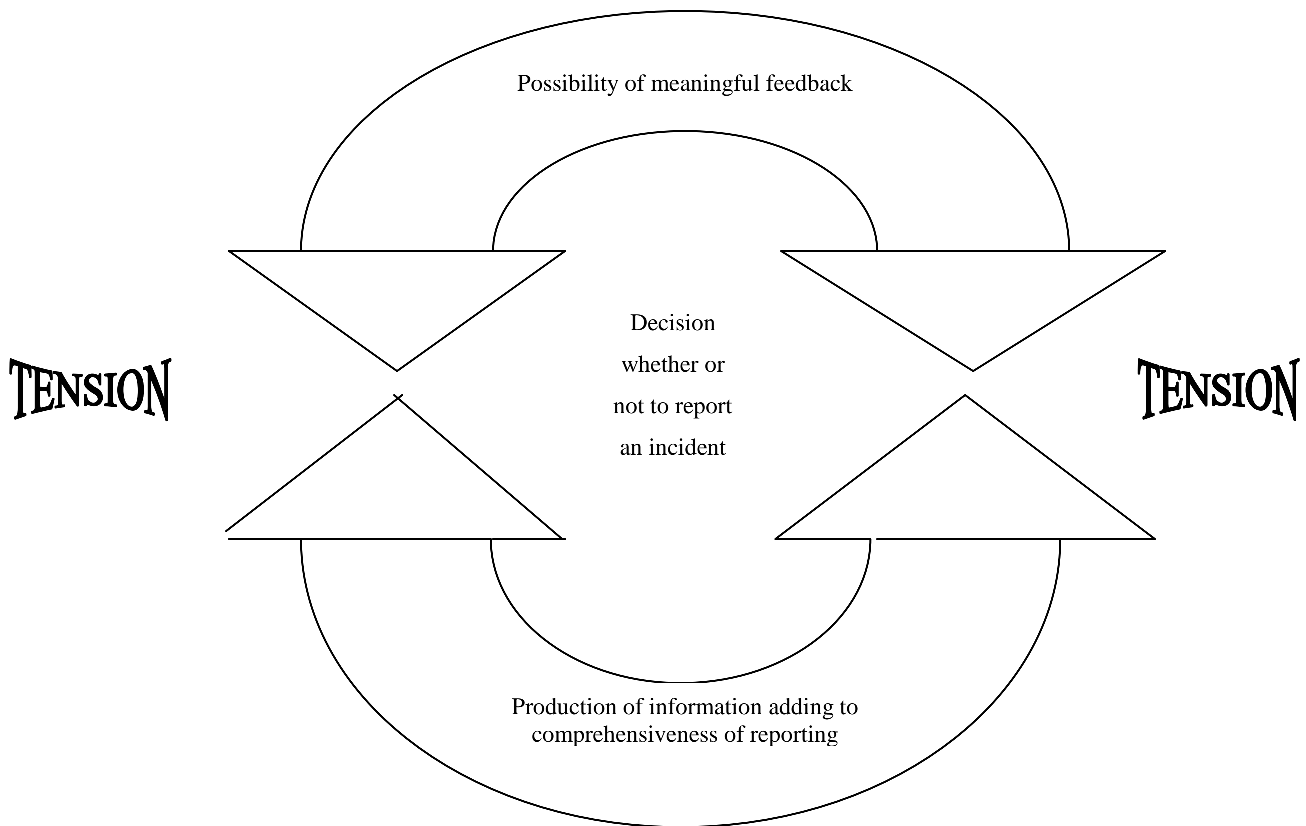

Fig 1. The vicious cycle of incident reporting

This paper separates the various barriers into four categories: procedural, institutional, epistemological and cultural factors. This typology has been adopted to reflect the availability of existing literature, although as will be noted throughout the text, the various categories are not mutually exclusive

and frequently overlap with each other. Although much of the literature is drawn from medical sociology, works from social psychology, ergonomics, and human factors engineering have also been examined.

Procedural factors are considered first, given that technical innovations and alterations are sometimes presented as relatively straightforward means of improving patient safety (an assumption which is not necessarily well-founded, as discussed below). Institutional factors are then examined as providing a more deeply-rooted foundation for behaviour. Institutions, conceived here as sets of formal rules and regulations, both deter and facilitate particular courses of action following patient safety incidents, in a more general way than procedural factors. The next group of barriers to be considered are epistemological - those relating to the various concepts and conceptualizations (e.g. risk, incident, severity, and so forth) relevant to (different groups of) health care professionals following an incident. The final area to be considered is that of culture. The notion of 'safety culture' dominates discussion of patient safety, yet the extent of theoretical work relating culture to other structuring variables is perhaps limited (Mackintosh, 2008). This paper defines culture as "shared understandings" which both feed on and help constitute the other factors considered here (institutions, procedures, and epistemology).

These factors are examined across three levels: the micro-level (individuals' reporting), the meso-level (reporting systems within individual Trusts), and the macro-level (the national legislative and regulatory framework)[6]. By providing a robust framework for analysing impediments to reporting, the paper will inform research regarding the removal of these impediments, ultimately providing a small step towards Stanhope et al.'s call for more research on establishing "the reliability of incident-reporting schemes" (Stanhope et al., 1999, p.6). This has recently become an ever-more urgent endeavour, as

[6] These are similar although not identical to the 'individual, organizational and societal' barriers identified by the NPSA (2005). As noted above, the paper does not consider to any great extent what Trusts or sub-Trust bodies then do with the information gathered through reporting systems (see Runciman et al., 2002, p.229), which is an equally complicated matter and one which merits separate investigation.

increasing faith is placed in the ability of reporting systems to act as a means of improving patient safety.

Procedural factors

Introduction

This perspective offers the most pragmatic reasons to explain why incident reporting is inconsistent across Trusts. However, it also indicates the presence of disagreements amongst commentators concerning the most desirable design of reporting systems. Procedures are here defined as the characteristics of the technology of incident reporting- i.e., procedures relate to the design of those goal-oriented mechanisms through which incidents are reported. As only reporting within Trusts is examined here, the macro-level does not apply.

Meso-level

This level relates to the precise nature of the instruments themselves which are put in place at the hospital level.

These instruments can differ in a number of important ways, including: the ambiguity or otherwise of guidelines; the extent of feedback on reporting, or at least demonstrated local usefulness (Chang et al. 2005; Kaplan and Fastman 2003; Millar and Mattke 2004; Wallace et al. 2001); the clarity of reporting forms, including the nature of questions on the form; ease of access to reporting systems; the extent of decentralisation of reporting; and the historical embeddedness of reporting procedures. The various tools associated with incident reporting could be seen as one means of transforming what has until relatively recently been mostly an informal process, and transforming it into a 'science' of reporting. Nonetheless, as Berg details at length (1997a), formal tools will always operate within an informal environment of medical professionals' existing understandings and activities.

There is therefore always a need for a 'sociology of the formal' which examines the operation of such tools within their social environments (Berg, 1997b; see also Karsh et al., 2006).

i. the ambiguity or otherwise of guidelines

It has been suggested that the more complex the reporting system, the less likely it will be used extensively (Takeda et al. 2003; Vincent et al. 1999). This is particularly the case concerning: the future use of incident reports; whether the reports will be anonymized and/or treated confidentially; whether incident reporting is compulsory or not; which incidents should be reported; what an 'incident' is; and so forth.

ii. the extent of feedback on reporting, or at least demonstrated local usefulness

The degree to which staff are provided with some acknowledgement of their report, and evidence that it has been used to improve patient safety, has been seen as an important factor in encouraging (or discouraging) them to report incidents. Staff often feel their efforts to report are not fairly rewarded, due to the lack of a feedback loop from risk managers (Vincent et al. 1999; Waring 2004). Wu et al have indicated that the 'perceived usefulness' of reporting is one major determinant of professionals' intentions to use incident reporting systems (with 'perceived ease of use', 'subjective norms' and 'trust', all in relation to management support, also bearing on decisions to report or otherwise) (Wu et al., 2008). Wallace et al. have detailed the wide variety of different feedback systems currently existing in the NHS, and examined a number of studies which broadly suggest that the more specific and immediate the feedback, the more likely that genuine learning from incidents will occur (Wallace et al., 2008).

iii. the clarity of reporting forms, including the nature of questions on the form

As Reason notes, "[t]he format, length and content of the reporting form or questionnaire are extremely important" in determining support for reporting incidents amongst staff (Reason, 1997, p.202).

Various different forms have been proposed, with variation between them generally relating to the extent to which closed or open questions are used, which closely relates to the complexity of the form. Evidence here is mixed: although open questions encourage more detailed analysis of incidents, they are time-consuming to answer and to analyse. In contrast, the use of closed questions may make the form more complex and longer, and lead to essential details being missed out (Reason, 1997, p.202)- although it is significantly easier to analyse.

Although a significant amount of literature has considered how the data from incident reports might be coded after the reports have been submitted (see, for example, Pronovost et al. 2006: 696; Runciman et al., 2002; Stebbing et al., 2007, p.443), less work has been done on the 'pre-coding' that occurs when report forms including 'closed questions' are set out[7]. As Stanhope et al. have noted, there is no universally accepted method of classifying drug errors (Stanhope et al., 1999, p.7), let alone all the various categories of patient safety incidents. In this connection, the availability of clear and accessible lists of adverse events has been seen as a means of overcoming ambiguity, as well as encouraging staff to report (when many may doubt whether a particular episode constituted a 'genuine' patient safety incident (Stanhope et al., 1999).

Finally, the balance of 'positive' and 'negative' elements also differs between forms. Some forms, for example, ask respondents to indicate the "positive actions taken to minimize adverse consequences", helping to "engender a positive supportive culture" (Amoore and Ingram, 2002, p.274), whereas others focus more closely on 'what went wrong'.

[7] although see WHO, 2005, p.15, which also refers to the collection of data.

iv. ease of access to reporting systems

In a context where, as indicated below, staff are often simply too busy (or reportedly too busy) to report patient safety incidents, the extent to which reporting systems are easily accessible (in geographic and time terms) is crucial. Electronic and web-based reporting has been advocated as a means of reducing transaction costs in reporting, as well as of facilitating the identification of trends (O'Neil et al. 1993; Giles et al. 2006).

v. the extent of decentralisation of reporting

As discussed above, 'decentralized' or sub-Trust, practitioner-led reporting systems have often been favoured by health professionals as a means of preserving their autonomy from management ((Suresh et al. 2004; Weingart et al. 2001). Hence, Waring found that "medical doctors were more inclined to report incidents where the process of reporting was localized and integrated within medical rather than managerial systems of quality improvement" (p.347, Waring, 2004)

Such decentralized systems may also facilitate the analysis of reporting data, given the fact that they necessitate the presence of individuals who take responsibility for overseeing the local reporting system (whether or not these people are explicitly designated as risk managers). As the communication of such analysis can itself promote additional reporting (see (ii) above), reporting rates can be predicted to drop "when [a 'local'] risk manager has broader responsibilities" than just to their care group or other sub-Trust group (Stanhope et al., 1999, p.10).

However, not all commentators favour the decentralization of incident reporting. In an article entitled "pitfalls of adverse event reporting in a paediatric cardiac intensive care", Ricci et al. emphasized the fact that "incident reporting in a highly technological medical domain is a complex process that seems to be heavily influenced by the profession of those who report as well as anonymity of the reporting system" (Ricci et al. 2004: 858).

They called for an integrated multidisciplinary approach, claiming that the loss of data is significant when adverse event reporting is managed by one set of professionals. Likewise, a request for a more multidisciplinary approach is echoed by O'Shea who researched medication errors (O'Shea 1999).

vi. the historical embeddedness of reporting procedures

Barach and Small (2000b, p.1683) have emphasized the role of historically-embedded procedures for the collection of incident reports, as one factor improving the prospects of current British reporting systems. Waring (2004, 2007) has detailed how the presence of such schemes, alongside the Clinical Negligence Scheme for Trusts (CNST), has improved the disposition of health professionals towards reporting- although they may also form a reason for resistance to pan-Trust reporting systems.

Micro-level: the time available for reporting

At the micro-level, individual staff members feel that there is no time or energy for reporting, as there are other more important and/or pressing demands to comply with (Vincent et al. 1999; Waring 2004). The manner in which workload and shifts are designed may, therefore, be linked to reporting rates (West et al. 2006).

Institutional factors

Introduction

This paper follows North in defining institutions as “the rules of the game in a society or, more formally…the humanly devised constraints that shape human interaction” (North, 1990, p.3).

This definition differs from what Edquist and Johnson have described as “the everyday meaning of the term [institutions], as rather concrete things” such as schools or universities (or indeed hospitals). Instead, the paper adopts what

Edquist and Johnson describe as the "'sociological' meaning of institutions as the things that pattern behaviour" (Edquist and Johnson, 1997, p.43). Individual bodies such as hospitals can instead be described as *organizations*, following Selznick. Organizations are bodies created to fulfil particular goals, i.e. with a specific teleology (although of course, over time the 'fit' between goals and action may reduce, and organizations may become 'institutionalized') (Selznick, 1948). As North suggests, on this definition, organizations are the 'players' while institutions constitute the 'rules of the game' (North, 1990, p.4-5)[8].

For the purposes of this paper, institutions will be confined to sets of formal rules and regulations which define the broad parameters of action. This definition excludes the informal elements which many sociological institutionalists have incorporated into their definitions of institutions (see, for example, March and Olsen, 1989, p.22; Powell and DiMaggio, 1991; and for a broader discussion of the relationship between culture and institutions, Hall and Taylor, 1996), but follows Immergut's analysis of health systems by focusing on structural elements determining individuals' and groups' room for manoeuvre (Immergut, 1992). Institutions thus constitute formal constraints and facilitators of specific types of behaviour on the part of agents.

Macro-level

The extent and quality of national rules and regulation concerning governance within the health sector have been detailed and analysed by a number of observers (DoH 2000; DoH 2001; Runciman et al. 2002; Salter, 2000, 2001), including in terms of their potential impact on patient safety (Waring 2007, 2008).

[8] This definition is, however, open to the challenge that hospitals need not have clearly-defined goals, but pursue a variety of different priorities simultaneously, some of which may even conflict (Daniels, 1992, p.124, quoting Schulz and Johnson 1983: 48, 53). Indeed, Daniels has suggested that a hospital may approximate to what March and Olsen have described as an "organized anarchy", "typified by unclear goals, poorly understood technology, and variable participation" (March and Olsen 1976: 252, quoted in Daniels, ibid.). Nonetheless, the distinction given between organizations and institutions is an intuitively attractive one and will be retained for the limited purposes of this paper.

Perhaps the most important element of this regulatory context is the extent to which reporting is seen as supporting or reducing the potential for litigation (Liebman et al. 2004; Weissman et al. 2005; Vincent et al. in Patient Safety, 2006; Gallagher et al., 2007; Fenn et al., 2004). Indeed, Vincent et al. describe incident-reporting as janus-faced, given the two "functions of risk management….a means of controlling litigation and a more general means of enhancing safety" (Vincent et al., 1999, p.20). Although not examined extensively in this paper, disclosure to patients is seen as a means of variously preventing litigation or encouraging it, depending on the context (Gallagher et al., 2007, p.2716; Stebbing et al., 2007, p.441). Regardless of whether reporting does lead to litigation, Dekke suggests that anxieties concerning the relationship between reporting and litigation will persist unless it is made completely clear at policy level "what the consequences of reporting could be [i.e.] what rights, privileges, protections and obligations people may expect" (Dekke, 2007, p.43). Reason has, further, suggested that this requires a clear distinction between what is and is not tolerable to any safety-critical organization, with the creation of such clear distinctions constituting a key element of a "just culture" (Reason, 1997).

Meso-level

At the Trust level, a variety of institutional factors have been isolated and examined for their impact on reporting levels.

Firstly, a number of studies have investigated the impact of providing or failing to provide confidentiality to reporters. Many have seen the lack of guarantees of confidentiality as reducing willingness to report (Shaw et al. 2005), particularly in combination with fears of litigation (Lawton and Parker 2002; Mazor et al. 2004; Schmidek and Weeks 2005).

Secondly, Cook (2000) and Wallace et al. (2001) have noted the impact of lack of resources on reporting. In particular, Wallace et al. stress that lack of money, staff time, IT support, information, and library systems all reduce the

likely efficacy of governance-based reforms, including those aimed at improving patient safety (ibid., p.80).

Thirdly, Waring (2004, 2007) has noted the importance of coordination between incident reporting systems and other risk management strategies in encouraging reporting. Such strategies may include the use of “case review, morbility and mortability (M and M) conferences, 'significant event audits', and clinical audit” and also “peer review” (Waring, 2007, p.172).

Micro-level

Institutional factors are manifest at the level of individuals in a variety of ways. Firstly, the extent to which staff are formally required to report incidents as part of their job descriptions and/or by protocols or regulations, will obviously have some impact on the degree of reporting. Perhaps counter-intuitively, both Brennan (2000) and Marchev et al. (2003) have suggested that mandatory reporting systems at US-state level have led to reduced levels of reporting. Weissman et al. have investigated the impact of mandatory reporting in conjunction with non-confidentiality, and detailed how, for their sample of hospital managers, “to a point, familiarity breeds acceptance-respondents from mandatory reporting states with public disclosure were less worried about lawsuits and more willing to have hospital names made public” (Weissman et al., 2005, p.1364). They also detailed how respondents from mandatory, non-confidential reporting states were less likely than those from non-mandatory reporting states to report more minor incidents (ibid., p.1363). The impact of (non-/)confidentiality on reporting rates is dealt with in greater detail below.

One particular formal means of encouraging hospital managers to focus on increasing reporting rates is through providing financial incentives for doing so. Gallagher et al. have detailed how 29 large health care purchasing coalitions in the US effectively reward reporting financially, by including compliance with a set of safety standards (many of which relate to incident

reporting) in their pay-for-performance programmes (Gallagher et al., 2007, p.2714).

Secondly, as touched on above, the extent to which feedback on reports is formalized may also affect reporting rates. This is particularly the case if the feedback mechanism is felt by respondents to represent some form of ‘reward’ for their actions (Edmondson, 2004a, p.87). As Reason notes, “[a]part from a lack (or loss) of trust, few things will stifle incident reporting more than the perceived absence of any useful outcome” (Reason, 1997, p.200; see also Waring, 2004). Finally, the presence or otherwise of formal mechanisms whereby managers offer reporters support may also affect their willingness to submit reports (Edmondson, 2004a).

Epistemological factors

Introduction

This perspective focuses on individuals' knowledge and perception of risk factors, and how these relate to outcomes (Green 1997). In this strand of sociological and anthropological study, numerous empirical research studies have been conducted to analyse "the ways in which people conceptualize and cope with risks as part of their lives and as members of particular social groups" (Lupton 1999: 15).

Macro-level

Constructivist approaches to epistemology (Tulloch 2008) can be applied to public perceptions of risks in health or medical institutions, and how they can be constructed through mass media or government interventions (Kewell 2006; Lupton 2004; Jackson et al. 2004). This macro-level aspect to epistemology has also been touched upon by the cultural theorists Douglas and Wildavsky, who have argued that:

> "Causality in the external world is generally treated as radically distinct from the results of individual perception. (...) Between private, subjective perception and public physical science there lies culture, a middle area of shared beliefs and values" (Douglas and Wildavsky 1982: 193).

Whether or not this epistemological aspect is assimilated with ‘culture’, one can discern particular approaches to risk and responsibility and the conceptual and empirical relation between the two. Hence, as Edmondson notes (2004a, p.70), error is frequently seen as indicative of individual incompetence rather than as resulting from more systemic factors. This may, obviously, lead to reluctance to report patient safety incidents.

Meso-level

In addition to the rather general cognitive framework referred to above, which tends to individualize responsibility for errors, it has also been suggested that different groups in society will consider risk from different mental perspectives. Hence, Wilkinson has suggested that "what we conceive as 'reality' of risk is determined by our prior commitments towards different types of social solidarity" (2001, p.1). In addition, risk discourses can sometimes be used to construct and reinforce social identity (Green, 1997). Bosk's point about doctors' willingness to report technical matters, rather than moral matters (Bosk 1979), represents their perceptions of risk in the operating theatre. Moreover, the gap between laymen (patients) and experts (health professionals) in their risk perceptions (Wynnes 1996) should be noted and explored further as a potential stumbling block to establishing a more transparent or interactive safety culture (Tulloch and Lupton 2003). Health professionals’ differing views of the relationship between risk factors and outcomes might affect the incident reporting behaviours of each group. Japp and Kusche argue that "(t)he orientation toward risk averse (as the seemingly safe side of proved and consented practices) [can come to] replace[ ] the orientation toward goal achievement" (2008, p. 82) amongst certain groups of health professionals, which would be likely to erode reporting rates. Differing

perceptions of risk will tend to become institutionalized over time, thus preventing organizational learning (Brunsson 1985) across Trusts.

It has been suggested that training can overcome particular biases against incident reporting. Hence, Vincent et al. suggest that “[h]igh rates of reporting depend on the continual reinforcement and education of the aims of incident reporting to staff” (1999, p.19). Training has been seen as particularly effective when it is linked to professional development, as in the case of the Royal College of Anaesthetist’s programmes, and obstetricians’ national professional education system, which has emphasized risk management (Waring, 2004, p.350-1).

Micro-level

At micro-level, individuals' interpretation of 'incidents', 'near misses', ‘accidents’ or 'risks' may differ depending on their level of awareness and shared understanding of 'appropriate' behaviour, potentially seriously compromising the validity of any findings based on analysis of report data (Reason, 1997, pp.204-5). Stanhope et al. have noted how staff may fail to report errors later detected through the screening of case notes, as they either “did not recognize them as errors or did not consider them worth reporting” (Stanhope et al., 1999, p.10). It has also been suggested that reporting is frequently biased towards events which caused actual harm, as opposed to near misses; and within the former category, towards those which had relatively serious outcomes. This is despite the fact that “[o]nly 40% of the resources consumed by adverse events is by those which lead to major disability or death”. In addition, by only reporting on incidents with serious outcomes, any resulting data will likely be too patchy for useful analysis at Trust level (Runciman et al., 2002, p.229). Other authors have suggested that reports are biased towards “preventable” errors rather than other patient safety incidents (West et al., 2006, p.1076).

In addition, it can be difficult for staff to precisely define when a ‘patient safety incident’ or event began or ended, and what the roles were of different

participants, unless guidelines for negotiating such definitional minefields are already provided in the reporting form (Dekke, 2007, p.40; Reason, 1997, p.119). This is complicated by the 'attribution error' examined in great depth by social psychologists- the notion that individuals will readily associate responsibility for error to individuals' "innate disposition, while attributing their own behaviour to circumstances" (Liebman and Hyman, 2004, p.26).

These definitional uncertainties are compounded by the fact that the fear of uncertainty and blame, or of losing one's position in the hierarchy in an occupational group, might also affect the risk perceptions of staff members.

Cultural factors

Introduction

From the mid-1980s onwards, particularly following analysis of the Chernobyl disaster, the embeddedness or otherwise of a 'safety culture' has been seen as a key inhibitor or facilitator of incidents (Pidgeon, 1991). James Reason's 'human factors' approach to safety promotion has applied this explicitly to reporting systems. Reason argues that it is "necessary to engineer a reporting culture" (Reason, 1997, p.195), one element of an array of cultural elements which together comprise a "safety culture" or (interchangeably) an "informed culture": "a reporting culture, a just culture, a flexible culture and a learning culture" (ibid., p.6; see also Kirk et al., 2006).

As use of the concept of "safety culture" has increased, its scope has expanded to the extent that it is sometimes used to cover almost all organizational and human factors relating to safety (see, for example, Dekke, 2007). This echoes debates in sociology and anthropology, where culture has been conceptualised in a bewildering variety of ways. These include: the "content and patterns of values, ideas, and other symbolic-meaningful systems as factors in the shaping of human behaviour and the artefacts produced through behaviour" (Kroeber and Parsons, 1958, p.583)- what has been described as the 'pattern theory of culture' (Jenks, 2005, p.36); "the

collective programming of the mind that distinguishes the members of one group or category of people from another" (Hofstede, 2001, p.9); the "socially shared meanings that derive from the interaction of social beings and that are embedded in institutions" (Jacobs, 1992, p.181); the "meaning and understanding" derived from "the actions and interactions among members of a society as they attempt to make sense of their contexts" (Jacobs, 1992, p.185; see also Geertz, 1973); the "values and expectations of actors about each other's actions and interactions, in particular about modes of governance" (Kümpers et al., 2002, p.342); and "shared frames of reference for meaning and action that encompasses the skills, beliefs, basic assumptions, norms, customs and language that the members of a group develop over time" (Antonsen 2008: 3).

Although this list of definitions reveals little apart from the fact that differences between definitions are relatively small, it does indicate that most definitions share a recognition that individuals are embedded in institutions and organizations, and that this context will shape their subsequent behaviour through its impact on group norms. A focus on culture therefore facilitates examination of the relationship between systemic and human error factors (Sprecht et al. 2006)- the ever-controversial nexus between 'structure' and 'action'.

A further complication concerning the conceptualization of culture is its contested relationship with 'climate', particularly in the field of industrial and patient safety. Guldenmund has suggested that culture, particularly 'organizational culture', came to usurp the previously-used concept 'organizational climate' in the 1970s (Guldenmund, 2000, 220). More recently however, the two concepts are often seen as complementary, with climate constituting a "reflection and manifestation of cultural assumptions" (Schein, 1992, p.230) (although climate is still sometimes used interchangeably with culture- see Ekvall, 1996). In the patient safety field, a number of measures of 'safety climate' have been developed, alongside continuing attempts to measure 'safety culture' and 'organizational culture' in general (see van den Berg and Wilderom, 2004 and Mannion et al., 2007, respectively). These

attempts to measure climate implicitly or explicitly adopt a distinction between climate and culture, with climate referring to the external, behavioural manifestations of an internalized culture (Flin et al, 2006; Patterson et al., 2005; Svyantek and Bott, 2004).

This paper will concentrate on culture rather than climate, and will define culture as “shared understandings” which both feed on and help constitute the factors considered above (institutions, procedures, and epistemology). ‘Culture’ will, however, be restricted to those “shared understandings” which are not explicitly codified. Examination of the “shared understandings” which are embodied in legislation, procedures and other written artefacts will be examined in the section on institutional factors.

There are three dimensions to understanding cultures in relation to incident reporting. First of all, there is a macro level dimension, where culture ‘beyond’ the hospital (and in particular, the public’s trust or otherwise in health professionals) can influence it both internally and externally. At the second, meso, level of analysis, disciplinary and organisational dynamics, in particular the issue of power relationships and the frequency of blame and denial, play a significant role in influencing the attitudes of members of staff towards incident reporting. The third, micro, level focuses on individuals' cultural attributes. As culture by its definition assumes a group of people, this perspective is difficult to apply to an individual actor within an organisation. However, individual characteristics such as age, sex and ethnic background might be linked with certain approaches to incident reporting.

Macro-level: cultures beyond the hospital

If a hospital is to perform and function well as a medical institution, there has to be public trust. The thrust for nurturing patient safety culture within hospitals arose after several malpractice incidents came to light (e.g. Bristol Royal Infirmary, Royal Liverpool Children's Hospital Trust (Alder Hey) and the Shipman scandal), therefore when hospitals' and health care professionals’ integrity and credibility were questioned (Neale 2005: 78). Efforts to retrieve

trust have been made nationwide in the case of the UK, and this involves all stakeholders, ranging from government, managers and the medical professions (Waring 2008).

The interactive aspect between society and hospitals at the macro-level certainly plays an important role, sensitising the staff in hospitals to risk management. In particular, the role of managers needs to be highlighted from the perspective of accountability to society (patients), regulator and government under the climate of mistrust, which is partially ascribed to discourses constructed by media reports (D'Oronzio 2000; Kewell 2006; Otten 1992).

At macro-level, society's perception of hospitals and doctors matter a great deal. The focus of the mass media on the individual (in order to report in simple terms “what went wrong” (Dekke, 2007, p.19)), the responsible health care unit and the management runs the risk of negative 'publicity' (Crane 1997; Millenson 2002; Kewell 2006; O'Neale Roach 2000). Due to the risk-critical nature of the health sector, hospitals are highly vulnerable to reputation effects, which in turn sensitize individual staff (managers, clinicians and nurses) at the meso-level (i.e. hospital) to medical errors and incidents on the hospital site.

Ironically, the fear of being branded a malpractice-prone hospital can promote a collective 'culture of silence', ‘denial’ (Safety First, 2006, p. 30), and 'blame avoidance'. In addition, fears that publishing material from incident reporting systems may "frighten the public unnecessarily", particularly "if the data are not valid or complete", have perhaps reduced the support of health professionals for public disclosure of incident data (p.1360, Weissman et al., 2005).

Aside from the extent to which there is a public ‘culture of trust’ in relation to health professionals, Reason has suggested that there may be different national cultures in relation to safety, drawing on Hofstede’s work. In particular, he has criticized the “individualism” of “Western culture” as a factor

discouraging reporting (Reason, 1997). The impact of such abstract cultural attributes on reporting may be rather difficult to empirically investigate.

We would suggest instead that most ‘national cultures’ would draw on specific institutional/organizational and procedural factors such as the extent of production pressures and their relation to safety pressures (see Perrow, 1999), the historical embeddedness of reporting, and the degree to which reporting is public, compulsory, and linked to litigation- all of which are examined below.

Meso-level: doctors' club culture and professional relationships in the hospital

Based on a certain 'shared understanding, feelings of clarity, direction, meaning and purpose' (Alvesson 2002, p.118), culture facilitates communications inside organisations. However, the same culture can have a negative and constraining effect on management and individuals' autonomous thinking and action. Hierarchical relationships or carefully orchestrated rituals, which are inherent in any societal, industrial, organisational or group-level activities, can function as a hindrance to critical thinking and therefore as 'the freezing of social reality' (ibid.). A variety of studies in health care and elsewhere have suggested that organizational culture can affect organizational performance (Scott et al., 2003a, b; Mannion et al., 2005a, b) and quality (Davies et al., 2000), as well as the potential for organizational reform (Davies, 2002) (see Martin, 2002 for a general overview of organizational culture, and Øvretveit, 2000 concerning organizational dynamics in health care).

Cultural theorists argue that the very culture that nurtures a sense of collegiality and solidarity among health professionals (Helmreich and Merritt, 2001) can also generate a culture of blame, silence and non-criticism (Freidson 1970; Bosk 1979; Lupton 1994; Rosenthal 1995; Walker 1999; Sheriff 2000; Hart and Hazelgrove 2001; Hulme 2002; Ehrich 2006; Kaldjian et al. 2008).

In medical culture, "error-free practice" has paramount importance, and thus medical errors, or even the incident reporting system, could directly have an impact on health professionals' qualifications or reputations. As a result, the potential use of the reports for litigation creates rightly or wrongly fear and resistance among the medical professions and hospital managers (Leape 1994; Department of Health 2000; Rosenthal 1995).

For this reason, hospital managers demonstrate concerns about the impact of a mandatory and non-confidential reporting system, as it not only discourages reporting activities but encourages lawsuits with negative consequences for patient safety (Weissman et al. 2005). This aspect is closely related to and inseparable from institutional aspects in broader terms, as discussed below (e.g. the tort system, expert risk assessment, and regulatory framework) (Vincent 2003; Berlin 2006; Abraham and Davis 2005).

Aside from the general impact of occupational solidarity on reporting, it has also been suggested that different occupational groups harbour different attitudes towards reporting. Different occupational groups such as managers, doctors, nurses, or variations in working types (such as full-time vs part-time) frame risks differently, and therefore demonstrate distinct patterns of behaviour towards incident reporting (McDonald et al. 2005: 405; Hirose et al. 2007; Braithwaite 2005). In particular, the discrepancy between nurses and doctors in their willingness to report incidents and near misses has been highlighted.

This is not least because "the nature of clinical autonomy in Britain" has led to a situation whereby "physicians exercise almost total freedom", albeit within the confines of a "tight budget" (Harrison and Schulz, 1989, p.203). At this level, 'club culture' amongst doctors is often cited as a hindrance to reporting. The process of 'becoming a doctor' has a large impact on individuals' sense of shame, and perceptions of risk (Becker et al. 1961). Fox terms this process as 'training for uncertainty' (Fox, 1957). She identifies three types of uncertainty faced by the medical student: (1) uncertainties over their mastery of the

complex body of scientific knowledge; (2) uncertainties over the limitations of that knowledge; and (3) uncertainties over distinguishing personal levels of competence from 'the intrinsically imperfect, enigmatic, and tentative properties of medicine itself' (Joyce et al. 2005: 344). In between these uncertainties and the socially-expected perfection, '(d)octors may, in fact, be particularly vulnerable to shame, since they are self selected for perfectionism when they choose to enter the profession.' (Davidoff 2002: 623). However, Atkinson has suggested that doctors can be ‘trained for certainty’, and drawn attention to the consequences of the organizational contours of medical work, including the division of medical labour between different professions and individuals. Atkinson notes that such factors can help to conceal precise responsibility for mistakes and accidents (1984) (for an interesting review of this position, see Bosk, 2005).

Bosk has suggested that senior medical staff delineate errors into two categories- technical and moral- and claims that errors are both more likely to be revealed and to be forgiven when these are technical, rather than moral, matters (Bosk 1979: 179). Davidoff argues 'the use of shaming as punishment for shortcomings and "moral errors" committed by medical students and trainees – such as lack of sufficient dedication, hard work, and a proper reverence for role obligations – probably contributes further to the extreme sensitivity of doctors to shaming' (Davidoff 2002: 623).

In order to analyse the ‘culture gap’ among occupational groups, a clear distinction between subjective and objective risk has been extensively researched, with a particular focus on the lay-expert divide (Slovic 1987; Rowe and Wright 2001). This perspective was applied to a hospital operating theatre department by McDonald et al (McDonald et al. 2005). The findings indicate that there was difference in the way risks were perceived between doctors and nurses. In their interviews, nurses, particularly junior nurses, did not refer to specific evidence in relation to processes for risk management, while doctors looked for 'scientific evidence' to defend their ideas, irrespective of the validity of the data.

The hierarchical relationship between doctors and nurses was also underlined in an interviewee's account:

"A lot of nurses wouldn't dare if they might be thinking it's a problem they wouldn't dare… they need to speak up. Usually it's probably fear of the great surgeon and they mustn't interrupt with their daft nursing ideas… so I think a lot of the time I think people are scared to look stupid or scared to speak up just because of the consequences that they may be made to look silly." (McDonald et al. 2005: 404)

This view was echoed by Ehrich (Ehrich 2006). However, this intimidation and fear of personal attack is not only confined to the occupational divide, doctor-nurse, but also among nurses as well. Research conducted by Orbe and King found that some nurses felt coerced into supporting wrongdoing (Orbe and King 2000), while Edmonson found that the attitude of nurse managers towards reporting was closely related to the general attitude of staff nurses towards reporting (Edmondson, 2004a, p.81).

Furthermore, nurses tend to observe more closely guidelines and checklists, while doctors tend to proclaim their autonomy and discretion over decisions (Kingston et al. 2004). Therefore, 'risks' from nurses' points of view often do not constitute 'risks' in the eyes of doctors. For doctors, risks are 'occupational hazards' (McDonald et al. 2005: 405). As a result, the concept of risk, which implies the apportioning of blame, is much more strongly felt among nurses than doctors. Waring has noted how, in the Trust which he studied, it was "expected that nursing staff should use the hospital system" for reporting incidents, unlike doctors, who "should continue to rely on existing collegial procedures for case review and complaints handling" (Waring, 2007, p.173-4). This echoes more general findings concerning attitudes towards safety improvement programmes, with an Australian study suggesting that nurses were “most affirming” towards a new programme, doctors the “least favourabl[y]” disposed, and allied health professionals’ attitudes lying between those of nurses and doctors (Westbrook et al. 2007; Braithwaite et al. 2008).

Nurses may, nonetheless, still feel discouraged from reporting, as they fear reprimand from those in authority by accepting 'responsibility for errors in which they may be merely the final player in a complex series of events' (Walker and Lowe 1998). The 'cultural mismatch' between nurses and doctors (Krogstad et al. 2004) and its impact on perception of risks could explain why nurses report more than doctors, once the system of incident reporting is put into place (Hirose et al. 2007). However, nurses are less willing to *talk* about specific errors in their own practice than doctors (McDonald et al. 2005: 405; Walker and Lowe 1998; Kaldjian et al. 2008).

Another source of tensions exists between managers and doctors. The lack of a shared language complicates the situation, making it difficult to arrive at a consensus about how to monitor and evaluate medical practice (Hart and Hazelgrove 2001; Salter 2001; Waring 2005). Indeed, Waring has suggested that incident reporting systems like the NRLS can be seen as one type of a variety of "new bureaucratic and managerial systems of scrutiny" which provide "managers with an expertise or 'gaze' to engage in the regulation of medical work and quality through a bureaucratic panopticon of surveillance" (ibid., p.164). Certainly, the fact that incident reporting systems originated within Trust management rather than arising 'organically' from care groups or other sub-Trust bodies has been described as one reason why doctors have failed to participate fully in reporting (ibid., p.170). Doctors reportedly feared that information derived from incident reports could be used for "ulterior" motives, or misinterpreted by managers lacking hands-on contextual experience (ibid., p.171). Waring has further suggested that this lack of trust in Management-led reporting systems has led to greater support amongst health professionals for sub-hospital reporting systems, run for example by groups of anaesthetists (in conjunction with the Royal College of Anaesthetists) (ibid., p.173) or in obstetrics (ibid., p.172). Although potentially of great benefit, the use of such systems is relatively resource intensive, and “raises questions about the ambitions of policy, as doctors appear to be prioritizing professional learning over organizational learning” (ibid., p.175).

To remedy this situation, the role of communication and mediation during the production and operation of reporting systems has been emphasized in a number of studies (Stebbing et al. 2008; Sexton et al. 2000; Gragan et al. 2004; Liebman and Hyman 2004). Overly-hierarchical relationships within the hospital, leading to poor inter-professional cooperation, often hinders open communication and reduces the potential for consensus amongst health professionals and between medical staff and managers. In contrast, Barach and Small have highlighted how positive, non-hierarchical relationships within work teams can facilitate a “culture of self-reflection and appraisal” (2000b, p.1684). Similarly, West et al. have drawn attention to the informal discussions that occur between health professionals and their colleagues, supervising faculty, and/or friends and family concerning patient safety incidents, and suggested that more formal programs should be introduced that build on these informal support mechanisms (West et al., 2006, p.1076).

Finally, Edmondson and Braithwaite et al. have suggested that different hospitals embody different 'cultural landscapes', which can impact upon the extent to which safety (and thus incident reporting systems) are prioritized (Edmondson 2004a; Braithwaite et al. 2005; see also Gifford et al., 2002 concerning hospital unit culture). Similarly, Barach and Small refer to “institutional climate”, which appears to relate to meso-level culture as defined here, as a factor which “can greatly influence the success or failure of reporting efforts” (2000a, p.759).

Micro-level: individual health professionals

Due to the emphasis of cultural theory on factors deriving mainly from group dynamics (professional, psychological and organisational), the theory is not largely applicable to the micro-level analysis, that is concentrated upon individuals' perceptions of, and responses to, risk.

However, some literature deals with the impact of individual characteristics or ‘who you are’ (age, sex, ethnic background) as well as ‘where you are’ in career terms, on risk perception. Vincent et al. have indicated that junior

doctors can be relatively unwilling to report to their seniors, as they feel less supported by their colleagues than senior doctors, a finding which was corroborated by concerns by senior staff that any reporting would lead to junior staff being unfairly blamed (Vincent et al. 1999, p.18). This is despite the fact that junior staff were, generally, "more likely to report than senior staff" (ibid., p.16), despite junior midwives being "much less likely to know which incidents to report and whose responsibility it is to do so, paralleling their generally greater ignorance of the basic incident reporting system" (ibid., p.18).

In another study, the gender gap between male-dominated doctors and female-dominated nurses is emphasized as an obstacle to inter-professional collaboration (Brandi 2000).

Conclusion

A variety of different means have been used to categorize those factors which inhibit health professionals' willingness to report patient safety incidents. Barach and Small set out "extra work, skepticism, lack of trust, fear of reprisals, and lack of effectiveness of present reporting systems [and lack of] confidentiality…. immunity.. [feelings of sympathy towards patients] and learn[ing] from reporting about adverse events)) (Barach and Small, 2000a, p.761). Waring differentiates 'individual factors' from 'work factors' and 'team factors' (Waring, 2004, p.347). Many commentators have talked simply of a 'safety culture', sometimes without much attention to what this culture consists in.

This paper attempted to categorize all significant inhibitors to reporting across three levels (macro, meso and micro) according to four general areas (procedural factors, institutional factors, epistemological factors and cultural factors). Attempts were made to restrict the scope of the different categories through the relatively tight definition of procedures as referring to the technology of reporting, of institutions as referring to the explicitly formalized

rules and regulations relating to reporting, of epistemology as concerning cognitive understandings concerning the causation of incidents, and of culture as informal norms surrounding reporting. The table on p.28 summarizes the preceding analysis.

By separating out the factors affecting incident reporting into twelve categories, the foregoing analysis should not be taken to suggest that all barriers to reporting can be easily identified and classified. On the contrary, all the categories overlapped to some extent, producing a considerably more complex picture than that often suggested by analyses of ‘safety culture’. The complicated nature of the barriers to reporting will inevitably also make attempts at their removal the more difficult, preventing ‘quick fix’ solutions which focus on one level (say, the individual health professional’s attitude to reporting) but ignore others which might interact with it.

	Macro-level	Meso-level	Micro-level
Procedural factors	N/A	ambiguity or otherwise of guidelines extent of feedback clarity of forms ease of access extent of decentralization historical embeddedness	Time constraints
Institutional factors	General regulatory context Litigation	Confidentiality of reports Resources Integration with other forms of risk-management	Formal requirements to report Financial incentives Formal feedback mechanisms
Epistemological factors	General assumptions concerning causes of error	Occupational differences in understanding of causes of error Training in understanding error	Individuals' understandings of reportable matters
Cultural factors	Public trust National culture	Club culture/professional cultures Hospital cultures	Seniority Gender

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